

SELECTION OF THE BEST CONSULTANT
PROJECT USING
ANALYTIC HIERARCHY PROCESS

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I hereby declare that I have checked this thesis and in my opinion, this thesis is adequate in terms of scope and quality for the award of the degree of Civil Engineering

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I hereby declare that the work in this thesis is based on my original work except for quotations and citations which have been duly acknowledged. I also declare that it has not been previously or concurrently submitted for any other degree at Universiti Malaysia Pahang or any other institutions.

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Thesis submitted in fulfillment of the requirements
for the award of the
Bachelor Degree in Civil Engineering

Faculty of Civil Engineering and Earth Resources
UNIVERSITI MALAYSIA PAHANG

JUNE 2018

ACKNOWLEDGEMENTS

Praise to Allah S.W.T, the God of the Universe who gave me strength to complete this thesis. This piece of work would not become possible without His bless.

Firstly, I would like to express my heartfelt gratitude to my supervisor, Encik Noram Irwan Bin Ramli for his kind assistance, advice and suggestions throughout this project. The supervision that he gave truly helped in progression and smoothness of my project.

Deepest thanks to my family especially my beloved parents, Mohd Zainon Bin Othman and Zakiyah Binti Salleh for their continuing financial and moral supports throughout my study. Special thanks also to all my friends, who are willing to help me when I facing a problem along the completion of this thesis.

Finally, I would like to acknowledge each and every person who has contributed their effort and time in this study either directly or indirectly. Without their helps, this work would not have been possible, thank you to all of you.

ABSTRAK

Pemilihan Perunding ialah masalah kompleks yang melibatkan pelbagai kualitatif dan kuantitatif kriteria. Dalam kajian ini, model pemilihan perunding berasaskan AHP digunakan untuk membangun dan membantu membuat keputusan untuk menyelesaikan masalah pemilihan perunding dalam memilih kombinasi kriteria perunding yang paling baik. The Analytic Hierarchy Process (AHP) adalah satu kaedah keputusan ditubuhkan untuk mensintesis pertimbangan dan memilih alternatif terbaik. Apabila objektif dan skop kajian yang ditetapkan, maka pengumpulan data dibuat melalui dua kaedah iaitu melalui kajian sastera dan kajian soal selidik. Maklumat yang diperoleh daripada soal selidik diterjemahkan ke dalam bentuk yang lebih mudah dan dianalisis dengan menggunakan perisian Expert Choice. Data-data ini dikira dengan menggunakan perbandingan dari segi pasangan. Ia dianggap secukupnya konsisten jika nisbah konsisten yang berkaitan (CR) adalah kurang daripada 0.1 (<10%). Nilai kurang daripada 0.1 adalah baik, bagaimanapun, ambang 0.1 dianggap sebagai amalan biasa. Hasil kajian ini menggambarkan bahawa terdapat persamaan dan ketidaksamaan di antara persepsi responden dengan latar belakang yang berbeza

Kata-kata berkaitan | Perunding, membuat keputusan, pertimbangan, Analytic Hierarchy Process (AHP), perisian Expert Choice, perbandingan dari segi pasangan, nisbah konsisten (CR), penilaian, pemilihan.

ABSTRACT

Consultant selection is a complex problem involving qualitative and quantitative multi criteria. In this study, an AHP-based consultant selection model is applied to develop and assist decision making to resolve the consultant selection problem in choosing the most favourable consultant's criteria combination. The Analytic Hierarchy Process (AHP) is an established decision method used to synthesize judgements and select the best alternative. When the objectives and scopes of study are set, then the data collection are made through two methods which are through literature review and a questionnaire survey. Information obtained from the questionnaire is interpreted into a simpler form and analysed by using the Expert Choice software. These data calculated by using Pairwise comparison. It is considered to be adequately consistent if the corresponding consistency ratio (CR) is less than 0.1 ($<10\%$). A value less than 0.1 is good, however, the threshold of 0.1 is considered as the rule of thumb. The results of the survey depicts that there are similarities and dissimilarities between perceptions of respondents with a different background.

KEYWORDS | *Consultant, decision making, judgements, Analytic Hierarchy Process (AHP), Expert Choice software, Pairwise comparison, consistency ratio(CR), ratings, selection.*

TABLE OF CONTENT

DECLARATION

TITLE PAGE

ACKNOWLEDGEMENTS 1

ABSTRAK 2

ABSTRACT 3

TABLE OF CONTENT 4

LIST OF TABLES 8

LIST OF FIGURES 9

LIST OF SYMBOLS 11

CHAPTER 1 INTRODUCTION 12

1.1 Introduction 12

1.2 Background of Study 12-14

1.3 Problem Statement 15-16

1.4 Research Objective 17

1.5 Research Question 17

1.6 Scope of Research 17-18

1.7 Significance of Study 18

1.8 Expected Result 18

CHAPTER 2 LITERATURE REVIEW 19

2.1 Introduction 19

2.2 Consultants 19-20

2.3 Categories of Consultants 21

2.3.1	Consultant in Private Sector	21
2.3.2	Consultant in Government Sector	22
2.4	Issues Involving Consultants	22-27
2.5	General Procedure for Selecting and Engaging Consultants	28-30
2.5.1	Quality and Cost-Based Selection (QCBS)	31
2.5.2	Quality-Based Selection (QBS)	31
2.5.3	Fixed Budget Selection (FBS)	31-32
2.5.4	Least Cost Selection (LCS)	32
2.5.5	Consultant's Qualification Selection (CQS)	32
2.5.6	Single Source Selection	32-33
2.6	Consultant Registration Requirement & Procedure with CIDB	34
2.7	Procedure in Selecting Consultant with CIDB	34-35
2.8	Qualified Consultants	36-37
2.9	Criteria of Consultant	37
2.10	Relevant Previous Research	38-39
2.10.1	Quality	39-40
2.10.2	Cost	40-41
2.10.3	Time	41-42
2.11	Among Project Teams, There Are The Consultant	42-43
CHAPTER 3 METHODOLOGY		444
3.1	Introduction	444
3.2	Study Design	444-45
3.3	Data Sources	446
3.4	Analytic Hierarchy Process	446

3.4.1	Theoretical Basis	47-48
3.4.2	AHP Methodology	49-54
3.5	Data Collection	55
3.5.1	Questionnaire Design	55-59
3.6	Expert Choice Software	60
3.7	Data Analysis	61-62
CHAPTER 4 RESULTS AND DISCUSSION		63
4.1	Introduction	63
4.2	Result of Questionnaire Analysis	63
4.2.1	Population Characteristics	63
4.2.1.1	Gender of Respondents	64
4.2.1.2	Experience of Respondents	64
4.2.1.3	Profession of Respondents	65
4.2.1.4	Company/Organization of Respondents	65
4.2.2	Comparison Between Two Factors	66-72
4.3	Solution with Expert Choice	73
4.3.1	Inconsistency	74-75
4.3.2	Synthesis (Obtaining the Result)	75-77
4.3.3	Sensitivity Analyses (Graph)	77-78
4.3.3.1	Dynamic Sensitivity Graph	79
4.3.3.2	Performance Sensitivity Graph	80
4.3.3.3	Gradient Sensitivity Graph	81
4.3.3.4	Head-to-Head Graph	82

CHAPTER 5 CONCLUSION AND RECOMMENDATION	83
5.1 Introduction	83
5.2 Summary of Results	883-85
5.2.1 Decision Support	86-87
5.2.2 Problems During Research	87
5.3 Conclusion	88-89
5.4 Recommendation	90
REFERENCES	91-93
APPENDIX A SAMPLE APPENDIX 1	94

LIST OF TABLES

Table 2.1	Summary of issues by authors	25
Table 2.2	Newspaper report on consultant's problems	26-27
Table 3.1	Pairwise compare the objectives and sub-objectives	53
Table 3.2	Rating scale of pair-wise comparison	58

LIST OF FIGURES

Figure 2.1	Relationship between time, cost and project quality	39
Figure 3.1	Quantitative research approach	45
Figure 3.2	Proposed AHP for consultant's selection	49
Figure 3.3	AHP in decision making	50
Figure 3.4	General AHP model	51
Figure 3.5	Final hierarchical structure	52
Figure 4.2.1.1	Pie chart for the respondent's age	64
Figure 4.2.1.2.1	Bar chart for the experience of works of respondent	64
Figure 4.2.1.3.1	Bar chart of the profession of respondents	65
Figure 4.2.1.4.1	Pie chart of the company/organization of the respondents	65
Figure 4.2.2.1	Bar chart of comparison between financial stability & past experience	66
Figure 4.2.2.2	Bar chart of comparison between financial stability & past performance	66
Figure 4.2.2.3	Bar chart of comparison between financial stability & references	67
Figure 4.2.2.4	Bar chart of comparison between financial stability & current workload	67
Figure 4.2.2.5	Bar chart of comparison between financial stability & safety performance	68
Figure 4.2.2.6	Bar chart of comparison between past experience & past performance	68
Figure 4.2.2.7	Bar chart of comparison between past experience & references	69
Figure 4.2.2.8	Bar chart of comparison between past experience & current workload	69
Figure 4.2.2.9	Bar chart of comparison between past experience & safety performance	70
Figure 4.2.2.10	Bar chart of comparison between past performance & references	70
Figure 4.2.2.11	Bar chart of comparison between references & current workload	71
Figure 4.2.2.12	Bar chart of comparison between references & safety performance	71
Figure 4.2.2.13	Bar chart of comparison between past performance & current workload	72
Figure 4.2.2.14	Bar chart of comparison between past performance & safety performance	72
Figure 4.3.1	Tree structure of consultant selection problem-solved	73
Figure 4.3.1.1	Inconsistency check	74
Figure 4.3.2.1	Results view	75

Figure 4.3.2.2 Subcriteria rating	76
Figure 4.3.3.1.1 Dynamic sensitivity graph	79
Figure 4.3.3.2.1 Performance sensitivity graph	80
Figure 4.3.3.3.1.1 Gradient sensitivity graph	81
Figure 4.3.3.4.1 Head-to-head graph	82
Figure 5.2.1 Highest priority value	84

LIST OF SYMBOLS

AHP	Analytic Hierarchy Process
ADB	Asian Development Bank
CIDB	Construction Industry Development Board
CSRN	Consulting Services Recruitment Notice
EOI	Expression of Interest
PAI	Project Administration Instructions
RFP	Request for Proposal
TOR	Term of Reference

CHAPTER 1

INTRODUCTION

1.1 Introduction

In this chapter, include the background of study, problem statement, research objective, research question, scope of research, significance of research and operational of research.

1.2 Background of Study

The success of large construction projects, especially infrastructure projects, depends on many elements such as budget, quality, and rate of progress. To ensure success, all parties in project need to have a really close cooperation via co-ordination and mutual assistance (Tran Thanh Hai, Long Le Hoai and Young Dai Lee, 2015). A good teamwork amongst the client, consultant and contractor to complete construction projects successfully are being experienced and enjoyed in Malaysia construction industry to transform Malaysia into developed world by 2020 (Abdullah *et. al.*, 2004).

Consulting firms live their day after day routine through acquiring, assigning and carrying out projects through their teams. It also well-known that usually consulting firms have more extensive and challenging recruitment processes in order to select the future consultants for their project teams. Several ways of assuring that the job applicant has what it takes to develop him/herself in this environment have been developed such as the well known assessments, that are a type of workshops where companies test the theoretical knowledge of the applicants, as well as a practical exercises with the purpose of analyzing their personality and behavior in action (Isaac et al., 2007).

A consultant (from the Latin *consultare* means "to discuss" from which we also derive words such as *consul* and *counsel*) is a professional who provides advice in a particular area of expertise such as management, accountancy, the environment, entertainment, technology, law (tax law, in particular), human resources, marketing, medicine, finance, life management, economics, public affairs, communication, engineering, sound system design, graphic design, or waste management. A consultant is usually an expert or a professional in a specific field and has a wide knowledge of the subject matter. A consultant usually works for a consultancy firm or is self-employed, and engages with multiple and changing clients. Thus, clients have access to deeper levels of expertise than would be feasible for them to retain in-house, and may purchase only as much service from the outside consultant as desired. It is generally accepted good corporate governance to hire consultants as a check to the Principal-Agent problem (<http://en.wikipedia.org/wiki/Consultant>).

The consultants can be the design consultants, cost and contract consultants, land surveyors, etc. The design consultants usually comprises of the architect, civil and structural engineers, mechanical and electrical engineers and other specialist designers, such as interior designers, landscape architects, lighting specialists, town planners, etc. Design consultants as a designer of the project in the area he/she is specialized in. They also as a facilitator of client's need and project brief. Besides, they as an advisor to the client on matters relating to design and on statutory requirements and by-laws relating to the project. The cost and contract consultant can be the quantity surveyors. The quantity surveyors usually act as the cost and contract consultant for a project.

As Clark Wilson (2008) notes in his article, the role of the consultant during construction is to administer the contract as being described in the Contract Documents. Consultants play a major role in the supply of new and fashionable organization concepts on the market for management solutions. In this study based on the drawing on the work of Schön, "consultants do neither regard the construction of problems and solutions as predetermined by these concepts nor as an entirely unstructured and open-ended effort" (Heusinkveld.S and Visschev.K, 2006).

Selecting right consultant for right project is the most crucial challenge for any construction owner (Tran Thanh Hai et al, 2015). It is vital for the client/owner to select the best consultant in their project. Hence, client satisfaction towards consultant's work is very important in order to be able to survive in the marketplace. Based on the research findings, it costs five times more expensive to develop a new construction client than maintaining the existing one. It is a fundamental issues for construction participants to be alert as they must constantly seek to improve their performance if they want to be remain to survive in nowadays global marketplace (Cheng.J et al, 2005).

Successful project is lead by the best selection of suitable, qualified project team, and experience project manager with good leadership skills. The criteria are most often related to the candidate's personal skills and experience in handling similar or multi projects. This study aims in providing an effective selection and recruitment of consultants on different projects for the contribution success of a project in terms of time, cost and quality (Natasa.M, 2014). It has been acknowledge that the selection of the consultants for construction projects should be on the basis of a set of multiple decision criteria that is both price and non-price related (San Cristobal, 2012; Singh and Tiong, 2005; Fong and Choi, 2000).

Consultant selection can be regarded as a complicated nonlinear classification problem, in which decisions are made according to the qualification criteria, consultant's attributes and decision makers' judgment. Furthermore, consultant selection is a multi-criteria decision problem that is, in essence, largely dependent on the uncertainty and vagueness in the nature of construction projects and subjective judgments of the decision makers (Singh and Tiong, 2005). Russell and Skibniewski (1988) also pointed out that consultant selection is a decision-making process that involves the development and consideration of a wide range of necessary and sufficient decision criteria as well as the participation of many decision-making parties.

The most important issue in the process of consultant selection is to develop an effective method to select the best one (S. Mahmoud et al., 2009). As mentioned above, this problem is a group decision making. Hence, in this research all issues and problems associated to the consultant will be discussed and the best criteria for selecting consultants will be weighted by using Analytical Hierarchy Process (AHP) method.

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